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EXAMINER	
PHAN, HUY Q	
ART UNIT	PAPER NUMBER
2617	

SHORTENED STATUTORY PERIOD OF RESPONSE	NOTIFICATION DATE	DELIVERY MODE
3 MONTHS	04/23/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Notice of this Office communication was sent electronically on the above-indicated "Notification Date" and has a shortened statutory period for reply of 3 MONTHS from 04/23/2007.

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Office Action Summary	Application No.	Applicant(s)
	09/771,210	ACHOUR, BAAZIZ
	Examiner	Art Unit
	Huy Q. Phan	2617

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 March 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 03/01/2007 has been entered.

Response to Amendment

2. This Office Action is in response to Amendment filed on date: 03/01/2007.

Claims 1-32 are still pending.

Response to Arguments

3. Applicant's arguments, with respect to the amended independent claims 1, 22 and 31, have been fully considered but they are not persuasive.

a) Applicant argued that Jin does not particularly teach the added limitations of "initiating handoff of at least one mobile station that meets a predetermined handoff criterion, wherein said predetermined handoff criterion comprises said at least one mobile station being serviced by a frequency with a predetermined status value, said at least one mobile station comprising a single pilot signal in an active set and said at least one mobile station comprising an RTD that is less than an RTD threshold". However, it

is found that Sharma and Satarasinghe disclose the above added limitations (see the detailed rejection below).

b) In response to the applicant's argument, with regard to the rejection of claims 2-21, 23-30 and 30 under 35 USC § 103(a) over Sharma and Satarasinghe, in view of Jin, it is believed that Sharma, Satarasinghe and Jin disclose all the limitations of the independent claims 1, 22 and 31 (see the detailed rejection below) from which claims 2-21, 23-30 and 30 depend, respectively. Thus, the combination of Sharma, Satarasinghe and Jin can be used to establish prima facie obviousness for claims 2-21, 23-30 and 30 because the references teach or suggest all claim limitations as required. See MPEP § 2143.03. Therefore, prima facie obviousness under 35 U.S.C. § 103 has been established.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

a) Claims 1-9, 11, 22-29, and 31-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sharma (U.S. Pat. No. 6,069,871 as previously cited) in view of Satarasinghe (U.S. Pat. No. 6,026,301 as previously cited), further in view of Jin (U.S. Pat. No. 5,737,704).

Regarding claim 1, Sharma discloses a system for improving efficiency (col. 2, lines 1-2, lines 14-15) of a wireless communications network (Abstract, line 1; col. 2, lines 18-20) employing a plurality of frequencies per cell (col. 4, line 60-63, col. 10, line 63; col. 11, line 22) comprising: first means for monitoring a network load/capacity (capacity requests to each of the system/network base stations) associated with each of said plurality of frequencies (each base station generates a cell or coverage area using two or more frequency carriers; col. 1, 63-67) and providing corresponding status values (capacity indications) in response thereto (col. 5, lines 4-13); second means for comparing said status values to a predetermined criterion and providing an indication (net excess capacity value/ NEC) in response thereto when one or more of said status values meet said criterion (col. 2 , lines 50-51) ; and third means for redistributing said network load in accordance with said indication (traffic channel assignment; col. 5, line 27-36, col. 13, lines 49-52); and initiating handoff of at least one mobile station that meets a predetermined handoff criterion (see figs. 4, 6 and descriptions), wherein said predetermined handoff criterion comprises said at least one mobile station being serviced by a frequency with a predetermined status value (see figs. 4, 6 and descriptions).

But, Sharma does not particularly show wherein the third means including determining which mobile stations are within an inner coverage area of a cell based on whether round trip delays (RTD) of the mobile stations are less than a threshold; and said at least one mobile station comprising a single pilot signal in an active set and said at least one mobile station comprising an RTD that is less than an RTD threshold.

However in analogous art, Satarasinghe teaches wherein the third means (figs. 2A-B and col. 5, lines 21-67) including determining (col. 5, lines 53-67) which mobile stations are within an inner coverage area of a cell based on whether the round trip delays (RTD) of the mobile stations (described as "measures a RTD value (not shown) representing a distance of the mobile unit from the cell site" see figs. 2A-B and col. 5, lines 53-67) are less than a threshold (RTD1); and said at least one mobile station comprising a single pilot signal in an active set and said at least one mobile station comprising an RTD that is less than an RTD threshold (see figs. 2, 4, 6 and descriptions). Since, Sharma and Satarasinghe are related to method of handoff in wireless communication; therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Sharma as taught by Satarasinghe for purpose of improving the "system and method for triggering hard handoff of a call" in order to "maintain a call within the CDMA network as long as possible, rather than handing it off to the second network too soon. Handing off a call too soon results in lost revenue for the CDMA network service provider, while waiting too long to do so will likely result in an decrease in call quality and an increase in dropped calls, both of which result in an increase in customer complaints" (see Satarasinghe's specification col. 3, lines 4-15).

But, Sharma and Satarasinghe do not particularly show initiating handoff of at least one mobile station within the inner coverage area to a different frequency on the cell. However in analogous art, Jin teaches initiating handoff of at least one mobile station within the inner coverage area to a different frequency on the cell (col. 2, lines

28-63). Since, Sharma, Satarasinghe and Jin are related to method of handoff in wireless communication; therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Sharma and Satarasinghe as taught by Jin in order for "that not only the occurence of hard handoffs between cells is prevented, but also the loss probability is maintained below a fixed rate. Particularly, the number of hard handoffs in a cell is reduced, so that the quality of communication is improved" (see col. 6, lines 11-16).

Regarding claim 2 and as applied to claim 1, Sharma, Satarasinghe and Jin disclose the aforementioned system. In addition Sharma discloses wherein said criterion includes one or more predetermined thresholds (EFC_{bt}, ERC_{bt}, ECE_{bt}, EWC_{bt}, NEC_{bt}, where NEC is the net excess capacity threshold that incorporates and depends upon the previous predetermined thresholds, col. 14, lines 58-61, lines 17-59) so that when one or more of said predetermined thresholds is surpassed by said one or more of said status values (col. 14, lines 58-61, lines 13-18), said criterion is met (thresholds are identified on this reference under the suffix bt, i.e. NEC_{bt} net excess capacity threshold and NEC net excess status value or capacity information).

Regarding claim 3 and as applied to claim 2, Sharma, Satarasinghe and Jin disclose the aforementioned system. In addition Sharma discloses wherein said status values are representative of loading conditions for communications system resources associated with each of said frequencies, said loading conditions representative of

currently available resources (col. 14, lines 43-47) allocated for each of said plurality of frequencies (col. 6, lines 18–22; col. 9, lines 48-52).

Regarding claims 4, 5, 6, and 7, and as each applied to claim 3, Sharma, Satarasinghe and Jin disclose the aforementioned system. In addition Satarasinghe discloses wherein each of said status values include a hardware resource component (channel elements), an air link resource component (forward and reverse links), and a handling resource component (Walsh codes), each component indicative of respective remaining resources, wherein said hardware resource component incorporates the currently channel elements (col. 14, lines 19-21) said air link resource incorporates transmit power available before maximum air link capacity is reached (EFC/ excess forward link capacity dependant upon allowable maximum and current forward link power and ERC/excess reverse link capacity dependant upon Thermal Noise Floor at the base station and total received power at the base station; col. 8, lines 14-22; See claims 11 and 12, col. 14, lines 13-18), and said handling resource incorporates the available Walsh codes (EWC/excess number of Walsh codes; col. 14, lines 22-24), each of the resources associated for a particular frequency (it is inherent that the frequencies assigned to a particular sector within a cell are contained in a base station).

Regarding claims 8 and 9 and as each applied to claim 4, Sharma, Satarasinghe and Jin disclose the aforementioned system. In addition Sharma discloses wherein said first means includes sector frequency controllers (col. 6, lines 10-11), one for each of

said plurality of frequencies in a given sector (each selector bank subsystem is within a base station controller, who at the same time is coupled to a plurality of base stations who defined a coverage area or sector; col. 11, line 64 – col. 12, line 11) wherein each of said sector frequency controllers is in communication with a corresponding call resource manager (A selector bank subsystem that performs both tasks of frequencies and resources allocation, col. 6, lines 18-22).

Regarding claim 11 and as applied to claim 9, Sharma, Satarasinghe and Jin disclose the aforementioned system. In addition Sharma discloses wherein said second means includes software (it is inherent that a system that compares values, stores values, and performs tasks based on priority or selective execution, must comprise a medium such as a computer for programming means, subsequently branching from a software brand) running on each of said sector frequency controllers (A selector bank subsystem that includes a selector bank controller that performs resource and frequency allocation, where said selector bank subsystem is coupled to a pilot data base which falls within a layer of a software brand, col. 6, lines 7-15) said software for generating a status value associated with a corresponding frequency (See definitions and equations on col. 8), comparing said status value to one of said predetermined thresholds (See definitions and equations on col. 8; col. 14 lines 58-61), and generating a status message (capacity information) in response thereto (col. 7, lines 9-14).

Regarding claim 22, Sharma discloses an efficient wireless communications system that accommodates a plurality of frequencies per cell (col. 10, lines 30-35) with a minimum amount of hardware (it is inherent that multi-frequency distribution within a cell or base station is made for means of improving the system performance such as hardware reduction; col. 2, lines 1-2) comprising: first means establishing communications between a wireless communications device and a second communications device via allocation of communications system resources associated with a given frequency (col. 11, lines 34-36); second means for monitoring said resources associated with said given frequency and providing a signal when said resources match a predetermined criterion (col. 6, lines 58-67 thru col. 7, lines 9-14; the BSC determination is made based on excess capacity responses, See col. 5, lines 5-63); and third means for transferring said communications from said given frequency to a target frequency in response to said signal (col. 7, lines 16 –27 thru lines 44- 53); and initiating handoff of at least one mobile station that meets a predetermined handoff criterion (see figs. 4, 6 and descriptions), wherein said predetermined handoff criterion comprises said at least one mobile station being serviced by a frequency with a predetermined status value (see figs. 4, 6 and descriptions).

But, Sharma does not particularly show wherein the third means including determining whether the wireless communications device is within an inner coverage area of a cell based on whether round trip delay (RTD) of the wireless communications device is less than a threshold; and said at least one mobile station comprising a single pilot signal in an active set and said at least one mobile station comprising an RTD that

is less than an RTD threshold. However in analogous art, Satarasinghe teaches wherein the third means (figs. 2A-B and col. 5, lines 21-67) including determining (col. 5, lines 53-67) whether the wireless communications device is within an inner coverage area of a cell based on whether round trip delay (RTD) of the wireless communications device (described as "measures a RTD value (not shown) representing a distance of the mobile unit from the cell site" see figs. 2A-B and col. 5, lines 53-67) are less than a threshold (RTD1); and said at least one mobile station comprising a single pilot signal in an active set and said at least one mobile station comprising an RTD that is less than an RTD threshold (see figs. 2, 4, 6 and descriptions). Since, Sharma and Satarasinghe are related to method of handoff in wireless communication; therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Sharma as taught by Satarasinghe for purpose of improving the "system and method for triggering hard handoff of a call" in order to "maintain a call within the CDMA network as long as possible, rather than handing it off to the second network too soon. Handing off a call too soon results in lost revenue for the CDMA network service provider, while waiting too long to do so will likely result in an decrease in call quality and an increase in dropped calls, both of which result in an increase in customer complaints" (see Satarasinghe's specification col. 3, lines 4-15).

But, Sharma and Satarasinghe do not particularly show initiating handoff of the wireless communications device to the target frequency. However in analogous art, Jin teaches initiating handoff of the wireless communications device to the target frequency (col. 2, lines 28-63). Since, Sharma, Satarasinghe and Jin are related to method of

handoff in wireless communication; therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Sharma and Satarasinghe as taught by Jin in order for "that not only the occurence of hard handoffs between cells is prevented, but also the loss probability is maintained below a fixed rate. Particularly, the number of hard handoffs in a cell is reduced, so that the quality of communication is improved" (see col. 6, lines 11-16).

Regarding claims 23 and 24 and as each applied to claim 22, Sharma, Satarasinghe and Jin disclose the aforementioned system. In addition Sharma discloses wherein said second means includes a plurality (a base station transceiver subsystem and a target base station transceiver subsystem) of base station transceiver subsystem controllers (col. 13, lines 16-17) having a selector frequency controller (selector bank subsystem controller; Fig. 2A item 214; coupled to a base station manager; col. 6, lines 10-11 thru lines 18-22) and a call resource manager (base station manager card in communication with or coupled to a base station manager, col. 6, lines 29-31), said call resource managers built-in the base stations transceiver subsystem controllers (BSC's, both base station transceiver subsystem controller and target base station transceiver subsystem controller) in communication with channel elements on a base station transceiver subsystem associated with said given frequency (col. 6, lines 32-39; col. 12, lines 31-32).

Regarding claim 25 and as applied to claim 24, Sharma, Satarasinghe and Jin disclose the aforementioned system. In addition Sharma discloses wherein said third means includes a load-balancing broker (A selector bank subsystem in communication with a pilot database for means of balancing load) in communication with a pilot database (Fig. 2A, item 216) running on a selector element controller in communication with selector elements of a selector bank subsystem of a base station controller (Fig. 2A, item 211; col. 6, line 8) that controls said base station transceiver subsystem and said target base station transceiver subsystem, said base station controller in communication with a landline network via a mobile switching center (MSC, col. 1 lines 26-28, Fig. 1, it is inherent that a BSC is usually coupled to a MSC via landline).

Regarding claim 26 and as applied to claim 25, Sharma, Satarasinghe and Jin disclose the aforementioned system. In addition Sharma discloses wherein said mobile switching center includes a call control processor (Fig. 2B, item 254; col. 6, line 40 thru lines 46-50), a supplementary services adjunct (Fig. 2B, DRAM, SRAM, EPROM, STORAGE, items 256-264, col. 6, lines 40-42), and a base station manager (Fig. 2B, item 282; col. 6, lines 29-31).

Regarding claim 27 and as applied to claim 22, Sharma, Satarasinghe and Jin disclose the aforementioned system. In addition Sharma discloses wherein said third means includes means for handing off said wireless communications device to a target frequency to facilitate load balancing between frequencies (col. 5, lines 54-60), said

wireless communications device less likely than other wireless communications devices operating communicating via said given frequency that do not match said predetermined criterion to subsequently require handoff for load balancing purpose (col. 8, lines 65-67).

Regarding claim 28 and as applied to claim 27, Sharma, Satarasinghe and Jin disclose the aforementioned system. Satarasinghe further discloses a system wherein said criterion includes a round trip delay value less than a predetermined round trip delay threshold (see figs. 2A-B and col. 5, lines 53-67).

Regarding claim 29 and as applied to claim 22, Sharma, Satarasinghe and Jin disclose the aforementioned system. In addition Sharma wherein said third means includes means for employing existing vertical neighbors and horizontal neighbors (candidate base stations, and overlaying cells or overlaying coverage subsequently meaning a neighborhood location, col. 14, lines 55-57) to said target frequency to select said target frequency so as to minimize instances of subsequent hard handoff (col. 14, lines 34-54).

Regarding claim 30 and as applied to claim 29, Sharma, Satarasinghe and Jin disclose the aforementioned system. Sharma further discloses wherein said means for employing existing vertical and horizontal neighbors to a target frequency (col. 14, lines 55-57) includes generating a frequency availability value and selecting said target

frequency to have a high frequency availability (col. 9,lines 3-11). Sharma in view of Satarasinghe fail to clearly specify a frequency availability value that is inversely related to the number of horizontal and vertical neighbors of said target frequency. However, it is obvious that when a mobile station is approaching an overlapping cell, distributed network range distances between the mobile station and neighboring overlapping cells upholding different frequencies are relatively small rather than when a cell is not approaching that particular service area, and priority is given to a set of frequencies near the mobile station location for handoff execution, generally speaking corresponding cell frequency priority is high while proximity for neighboring cells is small.

Regarding claim 31, Sharma discloses a system for strategically distributing communications system resources in a wireless communications system comprising:

first means for monitoring traffic in a cell of said wireless communications system (col. 2, lines 18-20), said cell associated with a plurality frequencies (Fig. 7, item 704, cells associated with a plurality of frequencies, col. 10, lines 30-33), each frequency associated with a predetermined geographic region within said cell that may overlap one or more other geographic regions within said cell (col. 10, lines 33-43, border zones are zones between multiple and single carrier frequency cells, See Fig. 8 for overlapping cells, items 802B and 804B as inner overlapping cells, items 802A and 804A as outside overlapping cells, and item 814 as an example of a border zone; See also col. 13, 45-48);

second means for monitoring system resources in said cell and providing a resource status indication in response thereto;

third means for comparing said resource status indication to predetermined criteria and providing a load reassignment command in response thereto (col. 13, lines 31-38); and

fourth means for selectively reassigning network load among said plurality of frequencies in response to said load reassignment command to maintain said system resource status indication in concurrence with said criteria (col. 13, lines 49-52); and initiating handoff of at least one mobile station that meets a predetermined handoff criterion (see figs. 4, 6 and descriptions), wherein said predetermined handoff criterion comprises said at least one mobile station being serviced by a frequency with a predetermined status value (see figs. 4, 6 and descriptions).

But, Sharma does not particularly show wherein the fourth means including determining which mobile stations are within an inner geographic region of the cell based on whether round trip delays (RTD) of the mobile stations are less than a threshold; and said at least one mobile station comprising a single pilot signal in an active set and said at least one mobile station comprising an RTD that is less than an RTD threshold. However in analogous art, Satarasinghe teaches wherein the fourth means (figs. 2A-B and col. 5, lines 21-67) including determining (col. 5, lines 53-67) which mobile stations are within an inner coverage area of a cell based on whether the round trip delays (RTD) of the mobile stations (described as “measures a RTD value (not shown) representing a distance of the mobile unit from the cell site” see figs. 2A-B

and col. 5, lines 53-67) are less than a threshold (RTD1); and said at least one mobile station comprising a single pilot signal in an active set and said at least one mobile station comprising an RTD that is less than an RTD threshold (see figs. 2, 4, 6 and descriptions). Since, Sharma and Satarasinghe are related to method of handoff in wireless communication; therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Sharma as taught by Satarasinghe for purpose of improving the "system and method for triggering hard handoff of a call" in order to "maintain a call within the CDMA network as long as possible, rather than handing it off to the second network too soon. Handing off a call too soon results in lost revenue for the CDMA network service provider, while waiting too long to do so will likely result in an decrease in call quality and an increase in dropped calls, both of which result in an increase in customer complaints" (see Satarasinghe's specification col. 3, lines 4-15).

But, Sharma and Satarasinghe do not particularly show initiating handoff of at least one mobile station within the inner geographic region to a different frequency on the cell. However in analogous art, Jin teaches initiating handoff of at least one mobile station within the inner geographic region to a different frequency on the cell (col. 2, lines 28-63). Since, Sharma, Satarasinghe and Jin are related to method of handoff in wireless communication; therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Sharma and Satarasinghe as taught by Jin in order for "that not only the occurence of hard handoffs between cells is prevented, but also the loss probability is maintained below a fixed rate.

Particularly, the number of hard handoffs in a cell is reduced, so that the quality of communication is improved" (see col. 6, lines 11-16).

Regarding claim 32, Sharma discloses a method for improving the efficiency of a wireless communications network (col. 2, lines 1-2, lines 14-15) that has a cell that accommodates a plurality of frequencies comprising the steps of: monitoring network load/capacity (capacity requests to each of the system/network base stations) associated with each of said plurality of frequencies (each base station generates a cell or coverage area using two or more frequency carriers; col. 1, 63-67; See also Fig. 7, item 704 for multiple frequency carrier cells) and providing corresponding status values (capacity indications) in response thereto; comparing said status values to predetermined thresholds (See col. 8, lines 5-63) and providing an indication in response thereto when one or more of said status values exceeds (network distribution according to load or capacity responses/indications; col. 12, lines 49-50; Fig. 10) one or more of said predetermined thresholds (excess capacity value/ NEC, See col. 14, lines 58-61 thru lines 17-59 for predetermined thresholds); and redistributing said network load in accordance with said indication (col. 13, lines 49-52).

But, Sharma does not particularly show determining which mobile stations are within an inner coverage area of a cell based on whether round trip delays (RTD) of the mobile stations are less than a threshold. However in analogous art, Satarasinghe teaches determining (col. 5, lines 53-67) which mobile stations are within an inner coverage area of a cell based on whether the round trip delays (RTD) of the mobile

stations (described as "measures a RTD value (not shown) representing a distance of the mobile unit from the cell site" see figs. 2A-B and col. 5, lines 53-67) are less than a threshold (RTD1). Since, Sharma and Satarasinghe are related to method of handoff in wireless communication; therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Sharma as taught by Satarasinghe for purpose of improving the "system and method for triggering hard handoff of a call" in order to "maintain a call within the CDMA network as long as possible, rather than handing it off to the second network too soon. Handing off a call too soon results in lost revenue for the CDMA network service provider, while waiting too long to do so will likely result in an decrease in call quality and an increase in dropped calls, both of which result in an increase in customer complaints" (see Satarasinghe's specification col. 3, lines 4-15).

But, Sharma and Satarasinghe do not particularly show initiating handoff of at least one mobile station within the inner coverage area to a different frequency on the cell. However in analogous art, Jin teaches initiating handoff of at least one mobile station within the inner coverage area to a different frequency on the cell (col. 2, lines 28-63). Since, Sharma, Satarasinghe and Jin are related to method of handoff in wireless communication; therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Sharma and Satarasinghe as taught by Jin in order for "that not only the occurence of hard handoffs between cells is prevented, but also the loss probability is maintained below a fixed rate.

Particularly, the number of hard handoffs in a cell is reduced, so that the quality of communication is improved" (see col. 6, lines 11-16).

b) Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sharma, Satarasinghe and Jin, further in view of Kang (U.S. Pat. No. 5,781,861 as previously cited).

Regarding claim 10 and as applied to claim 9, Sharma and Satarasinghe disclose the aforementioned system with a base station transceiver subsystem and a call resource manager (See Sharma; Fig. 2B, item 282; col. 6, lines 29-39). Sharma in view of Satarasinghe fail to clearly specify a system wherein said call resource manager is positioned on a base station transceiver subsystem. In the same field of endeavor Kang discloses a call resource manager positioned on a base station transceiver subsystem (col. 5, lines 6-10). Therefore it would have been obvious to one with ordinary skill in the art at the time of the invention was made to have Sharma in view of Satarasinghe call resource manager positioned in a base station as taught by Kang for the purpose of allocating resources directly at the base station.

c) Claims 12 - 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sharma, Satarasinghe and Jin, further in view of Krutz (U.S. Pat. No. 5,826,190 as previously cited).

Regarding claims 12 and 13, and as applied to claim 11, Sharma, Satarasinghe and Jin disclose the aforementioned system wherein said status message specifies that

said corresponding frequency is available; said corresponding frequency is available for handoff only (See Sharma; col. 9, lines 3-11; col. 10, lines 18-27); or said corresponding frequency is unavailable (See Sharma; col. 8, line 65 – col. 9, line 3), wherein said message is incorporated according to the specific frequency availability (See Sharma; col. 9, lines 51-67). Sharma, Satarasinghe and Jin fail to clearly specify that said corresponding frequency is available for emergency calls only. However in the same of endeavor, Krutz discloses a system where a status message specifies that a corresponding frequency is available for emergency calls only (Abstract; col. 9, lines 33-43). Therefore it would have been obvious to one with ordinary skill in the art at the time of the invention was made to have Sharma status message for frequency handoff availability to include a specification in the status message for emergency calls handoff when a corresponding frequency is available for the specified matter as taught by Krutz for the purpose of allowing better handoff execution when an emergency call need allocation within a service or coverage area.

Regarding claim 14 and as applied to claim 13, Sharma, Satarasinghe, Jin and Krutz disclose the aforementioned system. In addition Sharma discloses wherein said third means of the aforementioned system includes a load-balancing broker (The SBSC/selector bank subsystem controller is within an SBS/selector bank subsystem; col.6, lines 17-22) that receives said indication (Fig. 9, item 916; col. 12, lines 33-34), said load-balancing broker in communication with a pilot database and selector elements (Selector elements or selector bank, SEL; col. 6, lines 14-15).

Regarding claim 15 and as applied to claim 14, Sharma, Satarasinghe, Jin and Krutz disclose the aforementioned system. In addition Sharma discloses wherein said selector elements (col. 6, lines 8-11) of the aforementioned system are positioned on a base station controller and are in communication with channel elements of a base station transceiver subsystem associated (col. 6 lines 32-39) with said cell and said corresponding frequency (col. 5, lines 27-36).

Regarding claim 16 and as applied to claim 14, Sharma, Satarasinghe, Jin and Krutz disclose the aforementioned system. In addition Sharma discloses wherein said load-balancing broker of the aforementioned system includes means for determining mobile stations not currently undergoing handoff (mobile unit active set, col. 5, lines 42-54). In addition Jin discloses operating within the inner coverage area of the cell (see fig. 2), and associated with frequencies indicated via said indication and issuing a load shed request to said selector elements in response thereto (cols. 3-5).

Regarding claim 17 and as applied to claim 16, Sharma, Satarasinghe, Jin and Krutz disclose the aforementioned system. In addition Sharma discloses wherein said selector elements of the aforementioned system include means for implementing handoff of a mobile station from a first frequency to a target frequency in accordance with load balancing handoff criteria (Fig. 6A and Fig. 6B, col. 9, line 45 – col. 10, line 27).

Regarding claim 18 and as applied to claim 17, Sharma, Satarasinghe, Jin and Krutz disclose the aforementioned system. In addition Sharma discloses wherein said selector elements of the include means for providing a load shed response (capacity responses) to said load-balancing broker (SBSC, selector bank subsystem controller) in response to the receipt of said load shed request (capacity requests, col. 12, lines 29-37), said load shed response indicating if said mobile stations were successfully handed off to available frequencies specified in said load shed request (col. 12, lines 60-64) via said means for implementing handoff (col. 12, lines 64-66).

Regarding claim 19 and as applied to claim 18, Sharma, Satarasinghe, Jin and Krutz disclose the aforementioned system. In addition Sharma discloses wherein said load-balancing handoff criteria of the above mentioned system specify that handoff is only allowed from said first frequency to a target frequency having a higher frequency availability value than said first frequency (col. 9, lines 3-11) and when said target frequency is within the same sector as said first frequency (col. 11, lines 44-61), said handoff criteria giving preference to target frequencies with higher frequency availability values (col. 9, lines 3-11).

Regarding claim 20 and as applied to claim 18, Sharma, Satarasinghe, Jin and Krutz disclose the aforementioned system. In addition Sharma discloses wherein said means for determining of the aforementioned system includes a pilot database (col. 6

lines 8-9) and said selector elements, said pilot database including a vertical neighbor record specifying overlaying frequencies associated with each frequency (base stations that generate cells are queried for load balancing purposes it is inherent that in order for those base stations being queried they must be contained in a database col. 5, lines 52-53; and for handoff execution such as "hard" and "soft" the operating frequencies for those cell must be specified, col. 5, lines 54-60).

Regarding claim 21 and as applied to claim 16, Sharma, Satarasinghe, Jin and Krutz disclose the aforementioned system. In addition Jin discloses wherein said at least one mobile station within the inner coverage area of the cell is less likely than other mobile station in the cell to subsequently require handoff fro balancing purpose (col. 3).

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Huy Q Phan whose telephone number is 571-272-7924. The examiner can normally be reached on 8AM-6PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, George Eng can be reached on 571-272-7495. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Huy Phan

George Eng
GEORGE ENG
SUPERVISORY PATENT EXAMINER

Examiner: Phan, Huy Q. AU: 2617 Date: 04/06/2007